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EXAMINER	
MULLINS, BURTON S	
ART UNIT	PAPER NUMBER
2834	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/695,253	HONG ET AL.	
	Examiner	Art Unit	
	BURTON MULLINS	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,6,7,9,11,12,14,15,17,19 and 21-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,6,7,9,11,12,14,15,17,19 and 21-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1, 7, 9, 15, 17 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunfield et al. (US 5,694,268) in view of Nitta et al. (US 5,604,389). Dunfield teaches a spindle motor comprising: a rotatable component 36 defining a bearing gap and relatively rotatable with a stationary component 34 (Fig.2); a base plate 12 affixed to the stationary component (Fig.2); a stator 38, affixed to the stationary component, for generating an electromagnetic force that interacts with a magnet 70 affixed to the rotatable component and drives the rotatable component, wherein the stator 72 and the base plate 12 define a separation there between (not numbered, Fig.2), and wherein the stator 38 is situated radially outside the magnet 70 (Fig.2); a motor seal (flux shield) 82/292 situated radially outside the magnet and positioned axially above the stator (Figs.2&11; the flux shield is a "seal" in the sense that it covers the top of the stator); and a bonding substance 209 (overmold comprising rubber/plastic material, c.8:12-19; Figs.8-11) formed substantially about the stator, substantially filling the separation and uniting the base plate 266, the motor seal 292 and the stator (Fig.11).

Dunfield does not teach that the base plate axial thickness is "minimized" (i.e., reduced) adjacent the separation by "a recess defined within a radially extending portion of the base plate, and wherein a portion of the stator is positioned within the recess."

Nitta teaches a disk drive spindle motor including a stator core 1, stator coils 2 wrapped around stator poles 15, and a rotor 5 (Figs.4-8). The stator core 1 is fitted to a base plate 4 with

openings (recesses)13b, such that the lower part of each coil 2 is inserted into the corresponding opening 13 (c.4:41-45; Fig.8). In the words of claim 1, Nitta teaches a recess 13 defined within a radially extending portion of the base plate 4, and wherein a portion 2 of the stator 1 is positioned within the recess 13. The recesses help to lower the position of the core, thereby reducing the thickness of the motor (c.1:50-55; c.4:61-65; c.5:9-18).

It would have been obvious to modify Dunfield and "minimize" the base plate axial thickness adjacent the separation with "a recess defined within a radially extending portion of the base plate, and wherein a portion of the stator is positioned within the recess" per Nitta to reduce the thickness of the motor.

Regarding claims 7 and 15, Nitta's recess 13 "further comprises an opening defined through the base plate [4]". In the combination, the openings/recesses would be "substantially filled with the bonding substance" 209 of Dunfield, wherein "the bonding substance [209] forms a contiguous base plate" since the bonding substance would fill the openings/recesses to fully encapsulate the stator coils recessed therein and bond with the base plate.

Regarding claim 9, both Dunfield's and Nitta's motor are spindle motors for a disk drive (see abstracts). Further, note data storage disc 16 in Dunfield attached to the rotatable component (c.4:32-35).

Regarding claims 23-24, Nitta teaches a portion of the base plate 4 adjacent to the separation (between the baseplate 4 and stator 1) defines an opening 13 that is substantially filled with the bonding substance of Dunfield, the bonding substance forming a contiguous base plate, and wherein a portion of the stator in Nitta is positioned below an adjacent surface of the base plate (Nitta, Fig.8), the base plate having a varied axial thickness (the opening 13 defines a

'variation' in the axial thickness of the base plate 4 in Nitta).

Regarding method claims 17, 22 and 25, the method is taught by Dunfield and Nitta since all the claimed elements are taught and since assembly of the motor comprising these elements would necessarily require the recited steps.

3. Claims 1, 3, 7, 9, 11, 15, 17, 19 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lieu et al. (US 6,844,636) in view of Nitta et al. (US 5,604,389). Lieu teaches a spindle motor comprising: a rotatable component 100 defining a bearing gap (with bearings 107) and relatively rotatable with a stationary component (shaft) 106 (Fig.14); a base plate 105 affixed to the stationary component; a stator 104 affixed to the stationary component, for generating an electromagnetic force that interacts with a magnet 103 affixed to the rotatable component 100 and drives the rotatable component, wherein the stator 104 and the base plate 105 define a separation there between (Fig.14), and wherein the stator is situated radially outside the magnet (Fig.14); a motor seal (comprising thermoplastic portion 116 on top of stator coil 111; Fig.14) situated radially outside the magnet and positioned axially above the stator 104 (Fig.14); and a bonding substance (thermoplastic) 116, formed substantially about the stator 104, substantially filling the separation and uniting the base plate 105, the motor seal 116 and the stator 104.

Lieu does not teach that the base plate axial thickness is minimized (i.e., reduced) adjacent the separation by "a recess defined within a radially extending portion of the base plate, and wherein a portion of the stator is positioned within the recess."

Nitta teaches a disk drive spindle motor including a stator core 1, stator coils 2 wrapped around stator poles 15, and a rotor 5 (Figs.4-8). The stator core 1 is fitted to a base plate 4 with

openings 13b, such that the lower part of each coil 2 is inserted into the corresponding opening 13 (c.4:41-45; Fig.8). In the words of claim 1, Nitta teaches a recess 13 defined within a radially extending portion of the base plate 4, and.wherein a portion 2 of the stator 1 is positioned within the recess 13. The recesses help to lower the position of the core, thereby reducing the thickness of the motor (c.1:50-55; c.4:61-65; c.5:9-18).

It would have been obvious to modify Lieu and 'minimize' the base plate axial thickness adjacent the separation with "a recess defined within a radially extending portion of the base plate, and wherein a portion of the stator is positioned within the recess" per Nitta to reduce the thickness of the motor.

Regarding claims 3 and 11, in Lieu the bonding thermoplastic 116 is a generic form of thermally conductive epoxy.

Regarding claims 7 and 15, Nitta's recess 13 "further comprises an opening defined through the base plate [4]". In the combination, the openings/recesses would be "substantially filled with the bonding substance" 116 of Lieu, wherein "the bonding substance forms a contiguous base plate" since the bonding substance would fill the openings/recesses to encapsulate the stator coils recessed therein and bond with the base plate, i.e. the two parts are in contact or integrated (Lieu, Fig.14).

Regarding claim 9, Lieu's motor is a spindle motor for a disk drive (c.1:17-29), as is Nitta's motor (abstract).

Regarding claims 23-24, Nitta teaches a portion of the base plate 4 adjacent to the separation (between the baseplate 4 and stator 1) defines an opening 13 that is substantially filled with the bonding substance of Lieu, the bonding substance forming a contiguous base plate, and

wherein a portion of the stator in Nitta is positioned below an adjacent surface of the base plate (Nitta, Fig.8), the base plate having a varied axial thickness (the opening 13 defines a 'variation' in the axial thickness of the base plate 4 in Nitta).

Regarding method claims 17, 19, 22 and 25, the steps are inherent since all the elements are disclosed by Lieu and Nitta and the recited steps would necessarily be required to assemble the motor.

4. Claims 1, 7, 9, 15, 17 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacLeod et al. (US 6,282,053) in view of Nitta et al. (US 5,604,389). MacLeod teaches a spindle motor comprising: a rotatable component 40/42 defining a bearing gap (with bearings 24) and relatively rotatable with a stationary component (shaft) 20 (Fig.2); a base plate 100 affixed to the stationary component; a stator 80 affixed to the stationary component, for generating an electromagnetic force that interacts with a magnet 46 affixed to the rotatable component 40/42 and drives the rotatable component, wherein the stator 80 and the base plate 100 define a separation there between (not numbered, Fig.7), and wherein the stator 80 is situated radially outside the magnet 46 (Fig.2); a motor seal (comprising overmold) 92 situated radially outside the magnet 46 and positioned axially above the stator 80 (Fig.7); and a bonding substance (plastic overmold) 92, formed substantially about the stator 80 (c.5:28-48; Figs.4-5&7), substantially filling the separation and uniting the base plate 100, the motor seal 92 and the stator 80.

However, MacLeod does not teach that the base plate 100 axial thickness is minimized (i.e., reduced) adjacent the separation by "a recess defined within a radially extending portion of the base plate, and.wherein a portion of the stator is positioned within the recess."

Nitta teaches a disk drive spindle motor including a stator core 1, stator coils 2 wrapped around stator poles 15, and a rotor 5 (Figs.4-8). The stator core 1 is fitted to a base plate 4 with openings 13b, such that the lower part of each coil 2 is inserted into the corresponding opening 13 (c.4:41-45; Fig.8). In the words of claim 1, Nitta teaches a recess 13 defined within a radially extending portion of the base plate 4, and.wherein a portion 2 of the stator 1 is positioned within the recess 13. The recesses help to lower the position of the core, thereby reducing the thickness of the motor (c.1:50-55; c.4:61-65; c.5:9-18).

It would have been obvious to modify MacLeod and 'minimize' the base plate axial thickness adjacent the separation with "a recess defined within a radially extending portion of the base plate, and wherein a portion of the stator is positioned within the recess" per Nitta to reduce the thickness of the motor.

Regarding claims 7 and 15, Nitta's recess 13 "further comprises an opening defined through the base plate [4]". In the combination, the openings/recesses would be "substantially filled with the bonding substance" 92 of MacLeod, wherein "the bonding substance forms a contiguous base plate" since the bonding substance would fill the openings/recesses to overmold the stator coils recessed therein and bond with the base plate, i.e. the two parts are in contact or integrated (MacLeod, Fig.7).

Regarding claims 23-24, Nitta teaches a portion of the base plate 4 adjacent to the separation (between the baseplate 4 and stator 1) defines an opening 13 that is substantially filled with the bonding substance 92 of MacLeod, the bonding substance forming a contiguous base plate, and wherein a portion of the stator in Nitta is positioned below an adjacent surface of the

base plate 4 (Nitta, Fig.8), the base plate having a varied axial thickness (the opening 13 defines a 'variation' in the axial thickness of the base plate 4 in Nitta).

Regarding method claims 17, 22 and 25, the steps are inherent since all the elements are disclosed by the combination and the recited steps would necessarily be required to assemble the motor.

5. Claims 6, 14 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of Dunfield, Lieu or MacLeod, further in view of Nitta. The specific thickness of the base plate in each of these references is not disclosed as in the range of 0.1 to 0.3 mm; however, determining the range of thickness would have been a matter of obvious engineering design.

6. Claims 3-4, 11-12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one combination of Dunfield and Nitta or MacLeod and Nitta, further in view of Nakamura (US 5,490,319). Neither Dunfield, MacLeod or Nitta teach a thermally conductive epoxy, per se (claims 3, 11 & 19).

Nakamura teaches a thermally conductive epoxy composition 6 used to encapsulate stators where high electrical insulation and heat conducting properties are desired.

It would have been obvious to employ a thermally conductive epoxy per Nakamura to encapsulate the motors of Dunfield or MacLeod, further in view of Nitta so as to provide electrical insulation and heat conduction.

Regarding claims 4 and 12, use of specific known materials would have been obvious as a matter of engineering design.

Response to Arguments

7. Applicant's arguments filed 11 February 2008 have been fully considered but they are not persuasive.

8. Regarding the rejection over Dunfield et al. (US 5,694,268) in view of Nitta et al. (US 5,604,389), applicant argues there is no motivation to modify Dunfield with Nitta. Applicant notes embodiments in Dunfield employing a pin 242 (Fig.9) or a screw 340 (Fig.17) to mount the stator. The pin 242 and screw 340 occupy axial space between the stator and base plate. Applicant argues that this implies Dunfield does not minimize the base plate and axial space and form a low profile disc drive.

In response, the examiner notes that the pins and screws are two of multiple embodiments in Dunfield. The entire document must be considered since it has been held that "[t]he use of patents as references is not limited to what the patentees describe as their own inventions or to the problems with which they are concerned. They are part of the literature of the art, relevant for all they contain." *In re Heck*, 699 F.2d 1331, 1332-33, 216 USPQ 1038, 1039 (Fed. Cir. 1983) (quoting *In re Lemelson*, 397 F.2d 1006, 1009, 158 USPQ 275, 277 (CCPA 1968)). Further, a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred embodiments. *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied,* 493 U.S. 975 (1989). With this in mind, it is noted that Dunfield's first embodiment, as shown in Fig.2, does not employ pins or screws which occupy axial space, but rather an O-ring located outside of the space between the stator and base plate. See also Figs.3-4&6 as well as embodiments in

FIg.14,17,19&22 which do not employ pins or screws to occupy axial space. Applicant's argument thus ignores the other embodiments of Dunfield.

Further, the rejection concedes that Dunfield does not teach that the base plate axial thickness is "minimized" (i.e., reduced) adjacent the separation by "a recess defined within a radially extending portion of the base plate, and wherein a portion of the stator is positioned within the recess" and for this reason employs Nitta as a teaching of recesses 13 (Figs.6-8) in the base plate to lower the position of the stator core, thereby reducing the thickness of the motor (c.1:50-55; c.4:61-65; c.5:9-18). One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Regarding the argument that Nitta teaches away since Nitta's stator 1 is radially inside the rotor 5, and that molding the top of Nitta's stator would increase axial thickness, again one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this respect, Dunfield teaches all the claimed elements except for base plate axial thickness "minimized" adjacent the separation by "a recess defined within a radially extending portion of the base plate, and wherein a portion of the stator is positioned within the recess". Nitta is employed as a teaching of recesses 13 (Figs.6-8) in the base plate to lower the position of the stator core, thereby reducing the thickness of the motor (c.1:50-55; c.4:61-65; c.5:9-18). Applicant's comments regarding the structure of Nitta's stator and how it bonds to the base or motor seal are not germane since these

elements are taught by Dunfield. Further, Nitta's explicit teaching that the recesses 13 decrease axial thickness contradicts applicant's assertion that molding on top of Nitta's stator would increase axial thickness.

9. Regarding the rejection over Lieu (US 6,844,636) in view of Nitta et al. (US 5,604,389), applicant argues that molding on top of Nitta's stator would increase axial thickness, it is noted that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this respect, Lieu teaches all the claimed elements except for base plate axial thickness "minimized" adjacent the separation by "a recess defined within a radially extending portion of the base plate, and wherein a portion of the stator is positioned within the recess". Nitta is employed as a teaching of recesses 13 (Figs.6-8) in the base plate to lower the position of the stator core, thereby reducing the thickness of the motor (c.1:50-55; c.4:61-65; c.5:9-18). Applicant's comments regarding the structure of Nitta's stator and how it bonds to the base or motor seal are not germane since these elements are taught by Lieu. Further, Nitta's explicit teaching that the recesses 13 decrease axial thickness contradicts applicant's assertion that molding on top of Nitta's stator would increase axial thickness.

10. Regarding the rejection over MacLeod (US 6,282,053) in view of Nitta et al. (US 5,604,389), it is noted that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this respect, MacLeod teaches all the claimed elements except for base plate axial

thickness "minimized" adjacent the separation by "a recess defined within a radially extending portion of the base plate, and wherein a portion of the stator is positioned within the recess". Nitta is employed as a teaching of recesses 13 (Figs.6-8) in the base plate to lower the position of the stator core, thereby reducing the thickness of the motor (c.1:50-55; c.4:61-65; c.5:9-18). Applicant's comments regarding the structure of Nitta's stator and how it bonds to the base or motor seal are not germane since these elements are taught by MacLeod. Further, Nitta's explicit teaching that the recesses 13 decrease axial thickness contradicts applicant's assertion that molding on top of Nitta's stator would increase axial thickness.

11. Applicant's request pursuant to MPEP 707.07(f) is acknowledged; however, this request is redundant since applicant's questions were answered in the interview on 09 March 2007. It is noted that the case was inherited from another examiner after applicant filed an appeal against a 35 USC 103(a) rejection made by the previous examiner of claims 1, 3-4, 6-9, 11-12, 14-17 & 19-22 over Dunfield, Fujii (US 5,426,548) and Papst (US 5,877,916). Applicant's arguments were considered "persuasive" by the new examiner because in his opinion Dunfield alone was applicable under 35 USC 102(b) for at least claim 1 since the previous examiner's rejection clearly did not fully appreciate the scope of and properly interpret applicant's claim 1 language, e.g., "wherein the base plate axial thickness is minimized". This was discussed in detail in an interview with applicant on 09 March 2007 and applicant was made aware of the new position of the Office. MPEP 706.02(I) states that prior art rejections should be confined strictly to the best available art. It was the opinion of the new examiner that Dunfield was the best available art for at least claim 1 at the time applicant's arguments, the former examiner's rejection, and the available prior art were first reviewed by the new examiner. It is also noted that the 17 May

2007 Office Action containing the new grounds of rejection was non-final, in compliance with MPEP 706.07(a).

Regarding applicant's previous arguments against a 103(a) rejection involving Dunfield, Fujii (US 5,426,548) and Papst (US 5,877,916) in an earlier Appeal, the examiner notes that arguments concerning this rejection are moot in view of the new grounds of rejection and further do not advance prosecution.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 571-272-2029. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm or by e-mail at burton.mullins@uspto.gov. If attempts to reach the examiner are unsuccessful, the examiner's

supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system.

/BURTON MULLINS/
Primary Examiner, Art Unit 2834

bsm
22 April 2008